What is claimed is:

1. A WDM comprising:

a structure extending longitudinally from one end to another for supporting components of the WDM;

at least two optical components supported at the one end of the structure for transmitting and receiving optical signals;

a diffraction grating supported at the other end of the structure for diffracting the optical signals from the optical components;

a lens assembly supported by the structure and disposed between the optical components and the diffraction grating, the lens having a focal length for focusing the optical signals in relation to the optical components; and

wherein the coefficient of thermal expansion of the diffraction grating is a value chosen to be approximately equal to a negative of the change of index of refraction with temperature of air.

2. The WDM of claim 1 wherein the structure has a first coefficient of thermal expansion and the lens assembly has a second coefficient of thermal expansion, and wherein the first and second coefficients of thermal expansion are approximately equal.

3. The WDM of claim 1 wherein the structure has a coefficient of thermal expansion within 3 PPM/degree Celsius of a coefficient of thermal expansion of the lens assembly.

4. The WDM of claim 1 wherein the lens assembly is constructed of a material chosen to minimize its variance in focal length over temperature.

5. The WDM of claim 1 wherein the lens assembly has a change of index of refraction with temperature from 0 to -2.5 PPM/degree Celsius.

6. The WDM of claim 1 wherein the diffraction grating has a coefficient of thermal expansion of 0.5 PPM/degree Celsius to 1.5 PPM/degree Celsius.

7. The WDM of claim 1 wherein a coefficient of thermal expansion of the structure and the change in index of refraction with temperature of the lens are values selected so that the length of the structure changes proportionally with the focal length of the lens in response to temperature changes in the structure and lens, whereby the lens remains substantially focused in relation to the optical components.

8. An optical network having a wavelength division multiplexer/demultiplexer (WDM) comprising:

a structure extending longitudinally from one end to another for supporting components of the WDM;

at least two optical components supported at the one end of the structure for transmitting and receiving optical signals;

a diffraction grating supported at the other end of the structure for diffracting the optical signals from the optical components;

a lens assembly supported by the structure and disposed between the optical components and the diffraction grating, the lens having a focal length for focusing the optical signals in relation to the optical components; and

wherein the coefficient of thermal expansion of the diffraction grating is a value chosen to be approximately equal to a negative of the change of index of refraction with temperature of air.

9. The optical network of claim 8 wherein the structure has a first coefficient of thermal expansion and the lens assembly has a second coefficient of thermal expansion, and wherein the

first and second coefficients of thermal expansion are approximately equal.

10. The optical network of claim 8 wherein the structure has a coefficient of thermal expansion within 3 PPM/degree Celsius of a coefficient of thermal expansion of the lens assembly.

11. The optical network of claim 8 wherein the lens assembly is constructed of a material chosen to minimize its variance in focal length over temperature.

12. The optical network of claim 8 wherein the lens assembly has a change of index of refraction with temperature from 0 to -2.5 PPM/degree Celsius.

13. The optical network of claim 8 wherein the diffraction grating has a coefficient of thermal expansion of 0.5 PPM/degree Celsius to 1.5 PPM/degree Celsius.

14. The optical network of claim 8 wherein a coefficient of thermal expansion of the structure and the change in index of refraction with temperature of the lens are values selected so that the length of the structure changes proportionally with

the focal length of the lens in response to temperature changes in the structure and lens, whereby the lens remains substantially focused in relation to the optical components.